

# (12) UK Patent Application (19) GB (11) 2 397 111 (13) A

(43) Date of A Publication 14.07.2004

(21) Application No: 0300316.7

(22) Date of Filing: 08.01.2003

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(51) INT CL<sup>7</sup>:  
F16K 31/18 , B67D 1/12 , F16K 24/02

(52) UK CL (Edition W ):  
F2V VS1  
U1S S1111 S1892

(56) Documents Cited:  
GB 2374915 A GB 2349198 A

(58) Field of Search:  
UK CL (Edition W ) F2V VA4 VS1  
INT CL<sup>7</sup> F16K 24/02 24/04 31/18  
Other: Online: WPI,EPODOC,PAJ

(54) Abstract Title: Float lifting means for a fob detector assembly

(57) A fob detector assembly 10 comprises a chamber 14 having an inlet 18 and an outlet 20. A float valve 16 is arranged in the chamber 14, and co-operates with a seat 24 defined by the chamber to close the outlet. Lifting means 28, for lifting the float valve 16 from its seat 24 to open the outlet 20, comprise means for reducing the pressure differential across the float valve to allow the float valve to lift away from the seat. Alternatively, the lifting means is arranged to duct a fluid against the float which can provide a force in the opposite direction to a liquid in the chamber so as to allow the float to lift. Suitably, the lifting means comprises a valve stem arranged on an axis parallel to and offset from an axis of a valve stem of a vent valve of the fob detector.

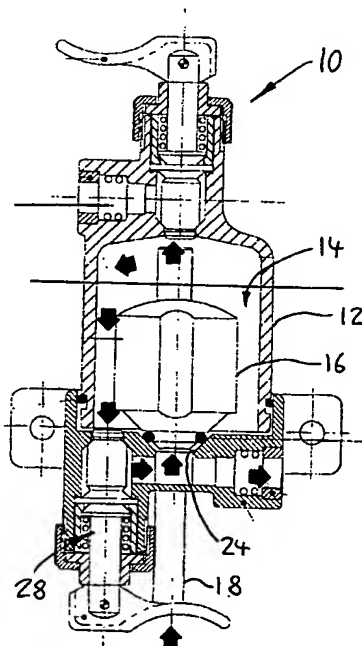


FIG 8

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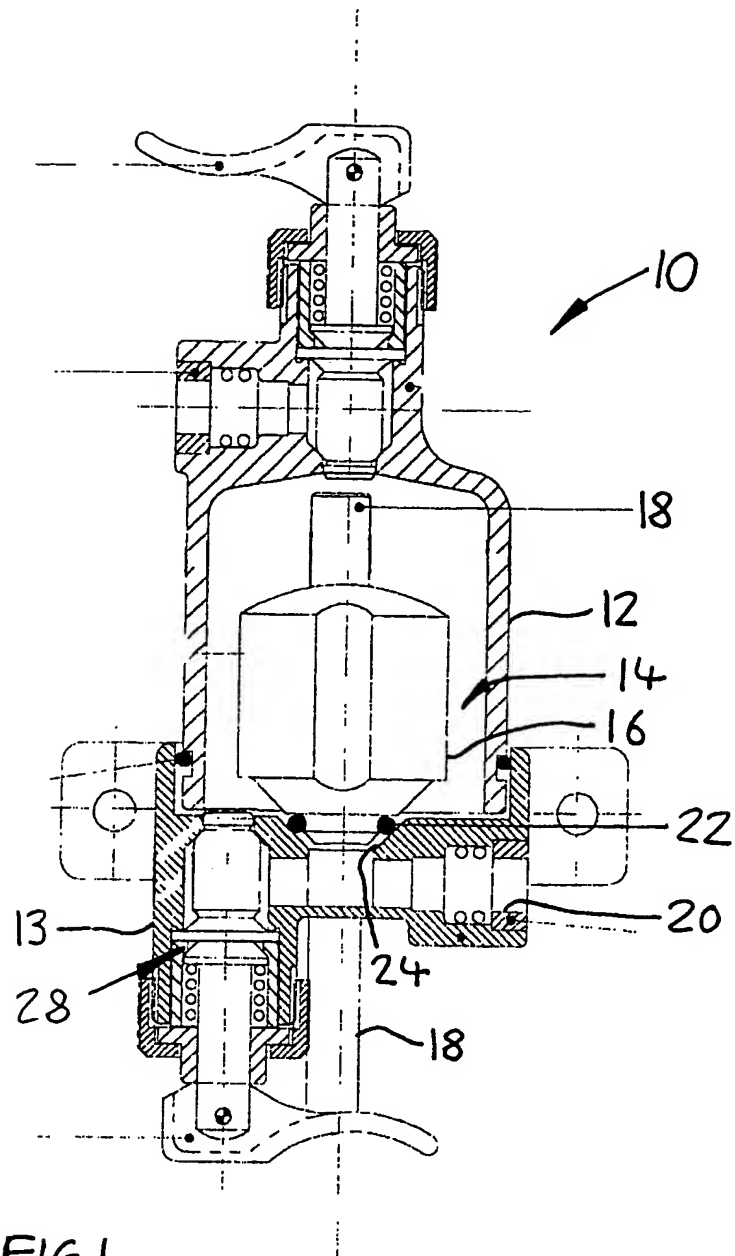


FIG 1

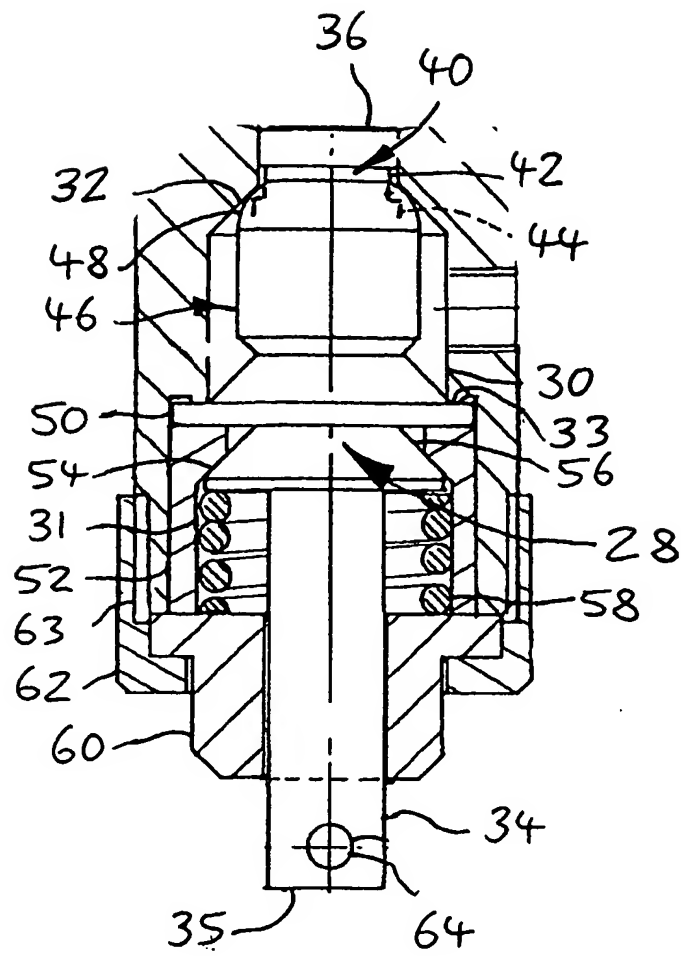


FIG 2

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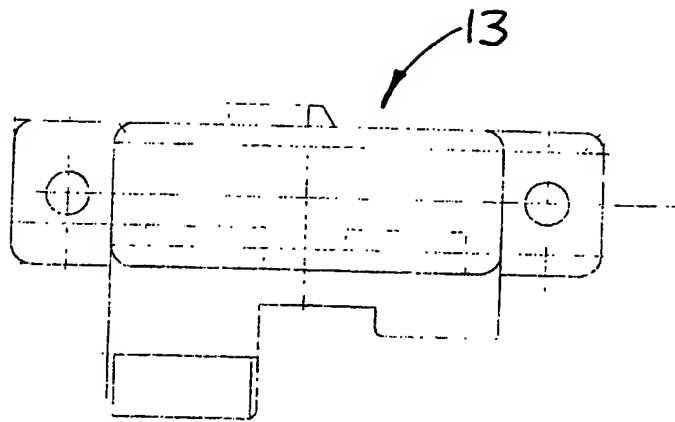


FIG 3

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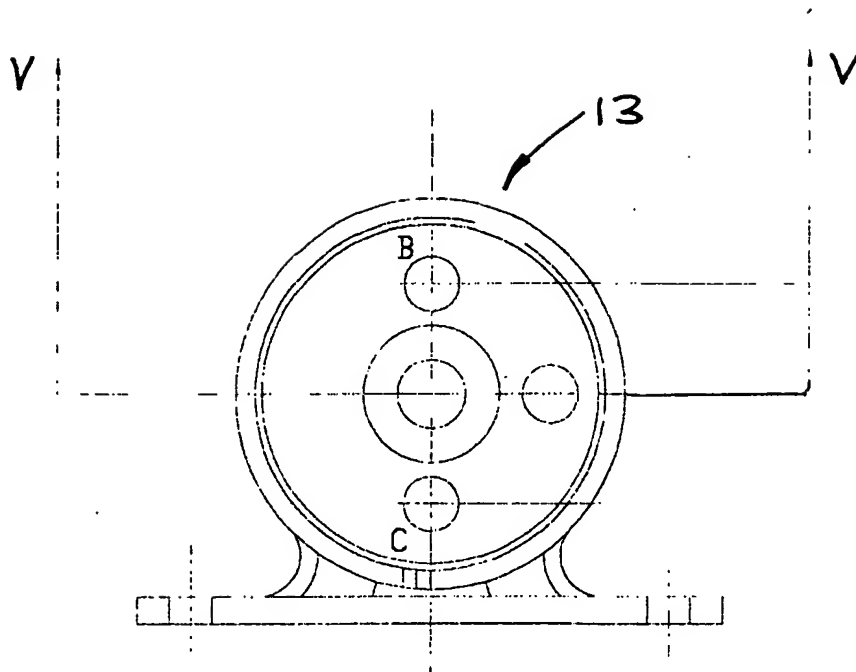


FIG 4

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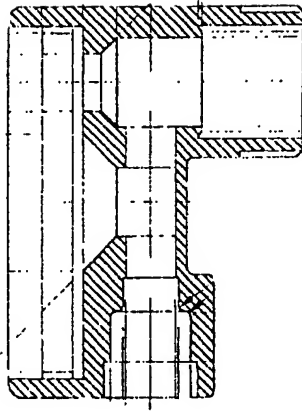


FIG 5

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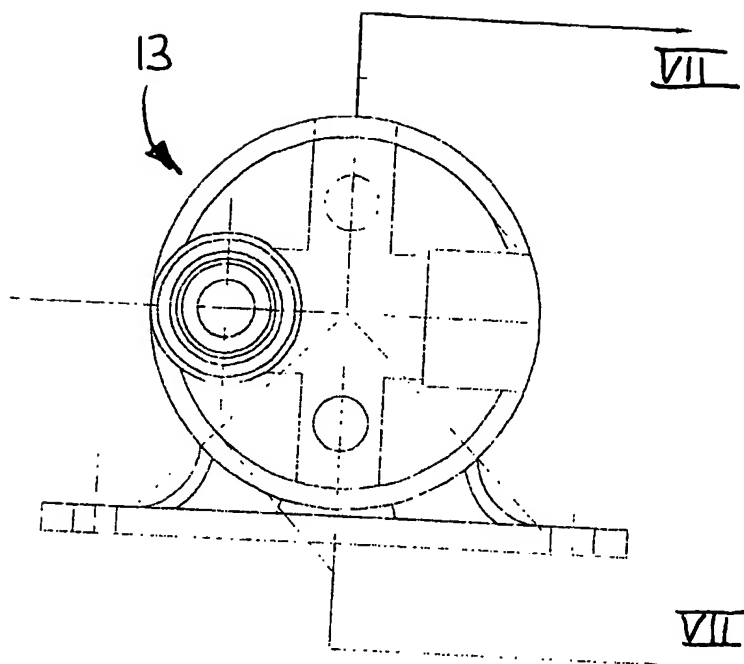


FIG 6

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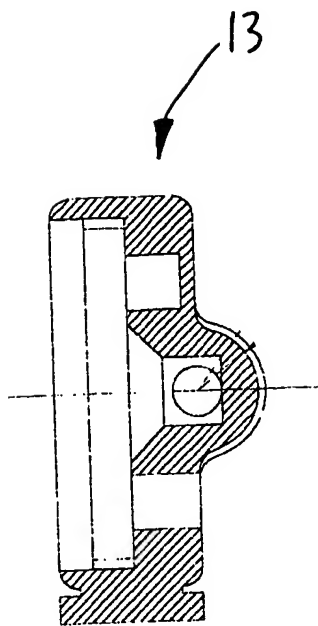


FIG 7

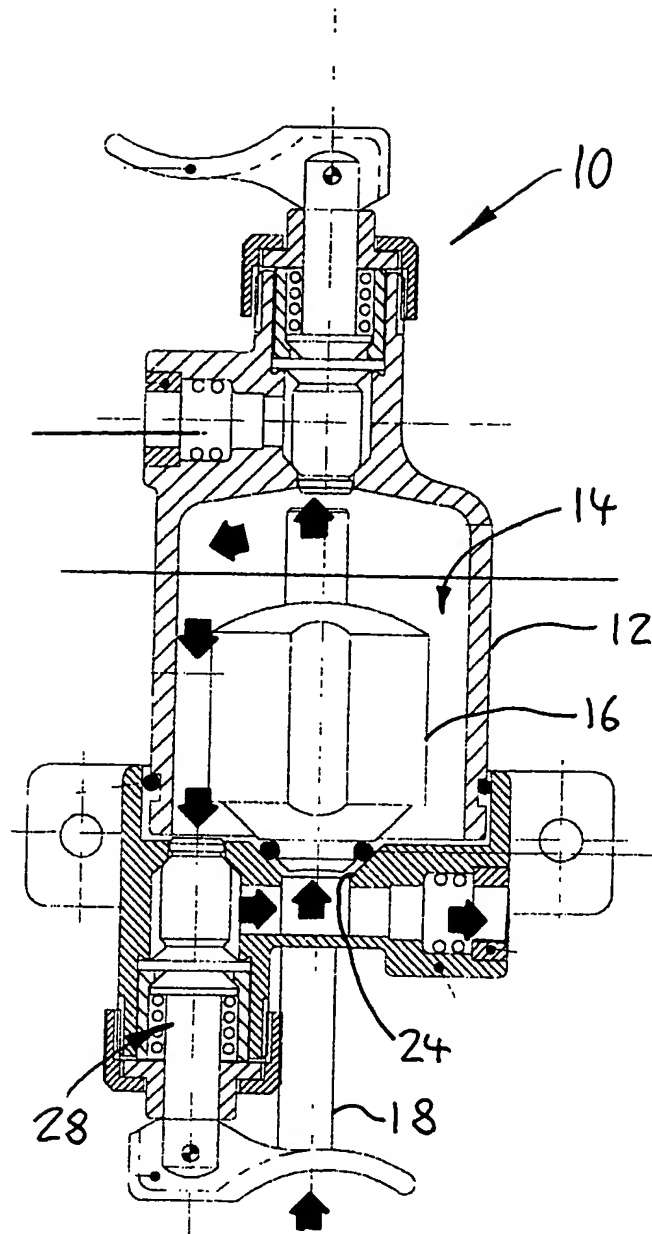


FIG 8

FOB DETECTOR ASSEMBLY

The present invention relates to a fob detector assembly.

5 A fob detector assembly is installed in a beer line between the barrel of beer and the tap. Fob (or foam) lies on top of the beer in the barrel. When the barrel is nearly empty, fob (or foam) flows through the fob detector. The fob detector assembly senses the fob (which has a different density to beer) and shuts off the beer line so that the fob is not dispensed from the tap.

10

A typical fob detector assembly comprises a closed chamber which has an inlet and an outlet. Beer flows in the inlet and out the outlet. A float valve is arranged in the beer in the chamber, above the outlet. The float valve floats in beer but not in fob. Therefore, when the chamber is full of beer the float valve floats and the outlet is open. However, 15 when the chamber is full of fob, the fob is detected (by virtue of its lower density) and the float valve sinks and closes the outlet. At this time, the barman changes the barrel of beer.

It is then necessary to vent the chamber using a vent valve arranged on the top of the 20 fob detector. Then, the float valve is lifted away from the outlet so as to reopen the beer line.

It is known from Irish Patent Application 3040/89 (in the name of the applicant) for the fob detector assembly to have a cam for lifting the float from its seat adjacent the outlet so as to allow beer through the outlet. The cam comprises a rod disposed through a 25 sealed aperture in the lower end of the fob detector assembly. The upper end of the rod has an inclined face. The lower end of the rod is attached to a lever. Pivoting movement of the lever causes the rod to rotate, and therefore the inclined face to come into contact with a lower end of the float. If pivoting movement of the lever continues 30 the float is lifted away from the seat adjacent the outlet, thereby reopening the beer line.

Whilst the arrangement of Irish Patent Application 3040/89 is successful, because the float and the cam contact each other, after prolonged use of the fob detector assembly, the float valve can be worn down by the inclined face of the cam. As mentioned above, the float valve is lifted from the seat by a mechanical force overcoming the downward pressure of the fob on the float valve. An elastomeric o-ring arranged on one flat valve seals the outlet when the float valve is in its lower position. Due to the force of the fob on the o-ring, the o-ring can become detached from the float valve by trying to stay on the seat.

An aim of the present invention is to provide an improved float lifting mechanism for a fob detector assembly.

According to a first aspect of the invention there is provided a float lifting assembly for a fob detector assembly, the float lifting assembly comprising lifting means for lifting a float valve away from a seat for the float valve to open an outlet of the fob detector assembly, wherein the lifting means comprises means for reducing the pressure differential across the float valve to allow the float valve to lift away from the seat.

According to a second aspect of the invention there is provided a fob detector assembly comprising a chamber having an inlet and an outlet, a float valve arranged in the chamber, which co-operates with a seat defined by the chamber to close the outlet, and lifting means for lifting the float valve from its seat to open the outlet, wherein the lifting means comprises means for reducing the pressure differential across the float valve to allow the float valve to lift away from the seat.

Preferably, the means for reducing the pressure differential of the first aspect or second aspect of the invention comprises means for substantially equalising the pressure across the float valve when the float valve is against the seat.

Preferably, the means for reducing the pressure differential across the float valve to allow the float valve to lift away from the seat comprises a fluid, most preferably a

liquid. In the second aspect of the invention the liquid may be the liquid in the chamber, eg beer.

According to a third aspect of the invention there is provided a fob detector assembly  
5 comprising a chamber having an inlet and an outlet, a float valve arranged in the chamber which co-operates with a seat in the chamber to close the outlet, and lifting means for lifting the float valve from its seat to open the outlet, wherein the lifting means is arranged to duct a fluid against the float which can provide a force in the opposite direction to a liquid in the chamber so as to allow the float to lift.

10

Preferably, the lifting means comprises means for equalising the pressure across the float valve when the float valve is against the seat.

The fluid may be ducted through another outlet but is preferably ducted through the  
15 outlet.

A fob detector assembly in accordance with the invention will now be described, by example only, with reference to the accompanying drawings, in which,

20 Figure 1 is a cross-section of a fob detector assembly in accordance with the invention,

Figure 2 is a close-up view of part of the float lifting assembly of the fob detector assembly of Figure 1,

25 Figure 3 is a front view of a base of the fob detector assembly of Figure 1,

Figure 4 is a plan view of the base of Figure 3, rotated by 180 degrees,

Figure 5 is a cross section of the base of Figure 4, taken along line V-V,

30

Figure 6 is a view of the base of Figure 3 from underneath,

Figure 7 is a cross section of the base of Figure 6, along line VII - VII, and

Figure 8 is a another cross-section of the fob detector assembly in accordance with the invention schematically showing operation.

5

Referring to Figure 1, a fob detector assembly 10 comprises a lid 12 and a base 13 which, together, form a housing, which defines an internal chamber 14.

10 A float valve 16 is positioned inside the chamber 14, and is arranged to move up and down such that is seals against the seat (to close the beer line) or moves away from the seat (to open the beer line).

The base 13 also has an inlet tube 18 which allows beer to flow from a keg (not shown) to the chamber 14. The base 13 also has an outlet 20 which allows beer to flow from  
15 the fob detector assembly 10 to a dispensing tap (not shown). The base 13 comprises a seat 24 above the outlet 20. The lower end of the float valve 16 has an O-ring 22, which is located so that it can sealingly engage a seat 24.

The lid 12 has a vent valve device substantially similar to the valve device in copending  
20 UK Patent Application 0110127.8 which allows venting of the fob detector chamber. The vent valve is not described in detail here.

In accordance with the invention, the base 13 comprises a float lifting assembly 28. The float lifting assembly 28 is necessary to lift the float valve 16 away from the seat 24  
25 so that the beer line is again unbroken, so that beer can be dispensed.

The float lifting assembly comprises a valve chamber defined by the base 13.

Referring to Figure 2, the valve chamber comprises a first chamber part 30 and a second  
30 chamber part 31. The second chamber part 31 is wider than the first chamber part 30 .

The first chamber part 30 defines a valve seat 32 . A shoulder 33 is provided between the first chamber part 30 and the second chamber part 31.

5 The float lifting valve assembly 28 comprises a valve stem 34 having a first end 35 and a second end 36. The second end 36 of the valve stem 34 has a valve head locator 40. The valve head locator 40 is in the form of a reduced diameter portion, e.g. an annular groove 42 in an enlarged end 44 of cylindrical form.

10 A valve head 46 of elastomeric material such as rubber, is provided. A bore (not shown) in the valve head 46 allows said valve head to locate on valve stem 34, specifically on the valve head locator 40. A lip 48 of the valve head 46 locates in the annular groove 42. That arrangement provides a bottom of "bowl-like" form which locates moveably above the valve seat 32. The valve head 46 has a collar 50 which locates on the shoulder 33.

15

A retaining wall 52 is provided which slides into the chamber 29, and specifically onto the collar 50. The retaining wall 52 defines a face 54.

20 The valve stem 34 carries a location/centralising face 56 located such that it is moveable above the face 54 as shown in Figure 2.

25 A closure member 60, of annular form, is provided. The closure member 60 is arranged above the retaining wall 52 as shown in Figure 2. A locking member 62 in the form of a sleeve is also provided. The locking member 62 has a threaded section 63 which co-operates with a corresponding threaded surface (not shown) on barrel housing 14. Furthermore, the locking member 62 has a knurled or a nut-like outer surface that

allows an operator to remove the locking member 62 or attach the locking member quickly and easily.

5 The float lifting valve assembly 28 also comprises a handle (not shown) to allow for manual operation of it. The handle has an aperture. A pin 64 is passed through the aperture in the handle and through an aperture (not shown) in the valve stem 34. The handle has an inclined surface and a kinked tip, the latter of which tends to resist slip of the user's hand while operating the device.

10 During assembly, the inlet 18 of the fob detector assembly 10 is connected by a beer line (not shown) to a pressurised beer keg (not shown). The outlet 20 is connected by a further beer line (not shown) to a tap (not shown) at which the beer is dispensed.

15 In use, when a new beer keg (not shown) is fitted to the inlet 18 beer flows into the chamber 14. Gas can be vented from the chamber by use of the top vent device on the lid.

20 The float lifting assembly 28 can be operated by the lever to allow beer to flow towards outlet 20 and the closed beer tap (not shown) and to the underside of the float to balance pressure and lift the float, thus allowing continuous flow of beer until the next time fob build-up occurs in the chamber, at which time the cycle is repeated.

25 The float lifting assembly 28 of the present invention is advantageous over the prior float lifting devices in that the float does not become worn by solid-solid contact and in that the o-ring remains in the float valve 16.

**Claims**

1. A fob detector assembly comprising a chamber having an inlet and an outlet, a float valve arranged in the chamber, which co-operates with a seat defined by the chamber  
5 to close the outlet, and lifting means for lifting the float valve from its seat to open the outlet, wherein the lifting means comprises means for reducing the pressure differential across the float valve to allow the float valve to lift away from the seat.
2. A fob detector assembly according to Claim 1, wherein the means for reducing the  
10 pressure differential comprises means for substantially equalising the pressure across the float valve when the float valve is against the seat.
3. A fob detector assembly according to Claim 1 or 2, wherein the means for reducing  
15 the pressure differential across the float valve to allow the float valve to lift away from the seat comprises a fluid.
4. A fob detector assembly according to Claim 3, wherein fluid is a liquid.
5. A fob detector assembly according to Claim 4, wherein the liquid is the liquid in the  
20 chamber.
6. A float lifting assembly for a fob detector assembly, the float lifting assembly comprising lifting means for lifting a float valve away from a seat for the float valve to  
25 open an outlet of the fob detector assembly, wherein the lifting means comprises means for reducing the pressure differential across the float valve to allow the float valve to lift away from the seat.
7. A float lifting assembly according to Claim 6, wherein the means for reducing the  
30 pressure differential comprises means for substantially equalising the pressure across the float valve when the float valve is against the seat.

8. A float lifting assembly according to Claim 6 or 7, wherein the means for reducing the pressure differential across the float valve to allow the float valve to lift away from the seat comprises a fluid.
- 5 9. A float lifting assembly according to Claim 1, wherein the fluid is a liquid.
- 10 10. A fob detector assembly comprising a chamber having an inlet and an outlet, a float valve arranged in the chamber which co-operates with a seat in the chamber to close the outlet, and lifting means for lifting the float valve from its seat to open the outlet, wherein the lifting means is arranged to duct a fluid against the float which can provide a force in the opposite direction to a liquid in the chamber so as to allow the float to lift.
- 15 11. A fob detector assembly according to Claim 10, wherein the lifting means comprises means for equalising the pressure across the float valve when the float valve is against the seat.
12. A fob detector assembly according to Claim 10 or 11, wherein the fluid is ducted through the outlet.
- 20 13. A fob detector assembly according to any one or more of Claims 1 to 5 and 10 to 12, wherein the lifting means comprises a valve stem, the valve stem is arranged on an axis parallel to and offset from an axis of a valve stem of a vent valve of the fob detector.
- 25 14. A fob detector assembly substantially as described herein, with reference to any one or more of the accompanying drawings.



Application No: GB 0300316.7  
Claims searched: 1-9

Examiner: D. Haworth  
Date of search: 28 January 2004

## Patents Act 1977 : Search Report under Section 17

### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A		GB 2374915 A (Wilman Marine)
A		GB 2349198 A (Wilman Marine)

### Categories:

X Document indicating lack of novelty or inventive step	A Document indicating technological background and/or state of the art
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& Member of the same patent family	E Patent document published on or after, but with priority date earlier than, the filing date of this application

### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>W</sup>:

F2V

Worldwide search of patent documents classified in the following areas of the IPC<sup>7</sup>:

F16K

The following online and other databases have been used in the preparation of this search report:

wpi, epdoc, paj